principle of transformation of energy. At all events, all the luminous, thermic, and detonating phenomena attending the fall of such bodies seem to be fully accounted for by the enormous amount of heat thus generated by their passage through the atmosphere.

JOHN LE CONTE
University of California

SCIENTIFIC SERIALS

Annalen der Chemie und Pharmacie, November 1871. This number opens with a lengthy paper by Græbe and Liebermann on anthracene derivatives; they have studied in detail anthracene carbonic acid, and the behaviour of anthraquinine with phosphoric chloride and potassic hydrate. They have also experimented with the anthraquinine sulpho-acids; at the present time researches on this subject possess considerable technical interest, as it is from disulphanthraquinonic acid that artificial alizarin is prepared, which seems to be fast supplanting the use of the madder root in dyeing. Böttger and Petersen follow on a subject nearly allied to the former, "on the compounds of anthraquinone containing nitrogen." Zinneman contributes a paper on an improvement in the method of distillation; the method is somewhat similar to that usually employed in chemical laboratories, that is to cause the vapour to pass up a long upright glass tube on which several bulbs have been blown, the exit tube being at right angles nearly at the top; the new portion of the apparatus consists in placing in the long tube a number of bell-shaped cages made of platinum wire gauze, which fit closely to the sides of the tube, and through which the vapour must pass or filter as it rises in the tube. With this apparatus the author has made an extensive series of experiments on the purification and determination of the boiling points of some of the most important of the ethyl compounds, on various acids of the same series, on the separation of propyl and butyl alcohols from the products of fermentation, and on the separation of the iodides of ethyl, propyl, and butyl. Judging by the results of these experiments, the new contrivance seems to work extremely well, and to be an improvement on the original form of apparatus. Several short papers complete this number, but they are not of extreme interest.

Journal of the Chemical Society, March 1872.—The composition of the natural tantalates and niobates forms the subject of a very important paper by Rammelsberg. Numerous analyses of various minerals containing the two rare elements, tantalum and niobium, are given, the results of which, however, cannot be usefully condensed.—Dr. Tilden presents a note "On the crystalline principle of Barbadoes Aloes;" the author has obtained a chloro-substitution product corresponding to the bromo-derivative, described some years since by Dr. Stenhouse, that is aloïn in which three atoms of hydrogen are replaced by chlorine. The remainder of this number is occupied by the abstracts of foreign papers, many of which are of great interest. —Dr. de Coppet finds that supersaturated solutions of sodic sulphate can be prepared by dissolving the anhydrous salt in cold water; it is, however, necessary that the anhydrous salt should be heated above 33°, and cooled out of contact with the air, as it is found that the anhydrous sodic sulphate, obtained by drying the ordinary salt (containing ten molecules of water) at a temperature lower than 33°, always acts as a nucleus in determining the crystallisation of a supersaturated solution of this salt. From this it appears that from crystallised sodic sulphate different bodies are obtained depending on the temperature at which the salt is dried.—A long abstract of Linnemann's important paper "On an improvement in the method of fractional distillation," and also of his researches on the normal propyl alcohol and its compounds are here given.—Another curious example of the lowering of the boiling point of mixtures of water and other liquids forms the subject of another abstract. Is. Pierre finds that a mixture of water and butyl iodide distils at 95°–96° (butyl iodide boils at 122·5°), and that a constant mixture of 79 parts of iodide and 21 of water is found in the distillate. Ethylic iodide (B.P. 72°) and water distil at 66°, only 3 to 4 per cent. of water condensing with the iodide. The abstracts as a whole are shorter and more condensed than they were originally; in some cases this must be regretted, though in others it is, perhaps, an advantage.

THE *Quarterly Journal of Microscopical Science* for April 1872, contains memoirs on the Development of the Enamel in the Teeth of Mammals, as illustrated by the various stages of growth demonstrable in the evolution of the fourth molars of a young elephant, and of the incisor teeth in the fœtal calf, by Prof. Rolleston, M.D. This paper is a reprint.—Note on Immersion Object-glasses for the Microscope, by Dr. Royston Piggott, chiefly directed towards the assertion that the aperture of an immersion lens can never exceed 80°, which this author denies.—Observations of Pathological Changes in the Red Blood-corpuscle, by J. Braxton Hicks, M.D.—On the Artificial Production of some of the principal Organic Calcareous Formations, by Prof. Harting, of the University of Utrecht. This is an abridged report of researches undertaken with the view of producing, independently of living organisms, certain calcareous formations, which are met with in animals as integral parts of their skeleton, and this by causing calcium carbonate and phosphate to combine in the nascent state with organic substances.—On the Peripheral Distribution of Non-medullated Nerve-Fibres, by Dr. E. Klein; the third part of a memoir, of which the previous portions appeared in this journal. It treats of the relation of the non-medullated nerve-fibres to small arteries, small veins, and to capillary vessels in the muscular substance of the frog's tongue; and the termination of nerve-fibres in the ciliated duct in the tail of the rabbit.—On the Structure of Tendon, by J. Mitchell Bruce, partly in support and partly in controversion of the views of Boll, as detailed in Max Schultze's *Archiv*.—The Embryology of Chrysopa, and its bearing on the Classification of the Neuroptera, by A. S. Packard, Jun., M.D. Reprinted from the *American Naturalist*.—Preliminary notice of Researches on the Anatomy of the Serous Membranes in Normal and Pathological Conditions, by Dr. E. Klein and Prof. Burdon Sanderson, forming a part of investigations on infectious diseases, undertaken for the Medical Department of the Privy Council. These investigations relate to more than 250 animals, especially rabbits and guinea pigs, many frogs, several cats, dogs, some rats, and one monkey.—The remainder of the journal is occupied with abstracts, notices, and reports.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, May 16.—"On the Specific Heat and other physical characters of Mixtures of Methylic Alcohol and Water, and on certain relations existing between the Specific Heat of a Mixture or Solution, and the Heat evolved or absorbed in their formation," by Dr. A. Dupré.—"On Supersaturated Saline Solutions," Part III., by Charles Tomlinson, F.R.S., and G. Van der Mensbrugghe.—"Remarks on the Sense of Sight in Birds, accompanied by a description of the Eye, and particularly of the Ciliary Muscle in the genus *Raptores*," by Mr. Robert Lee.—Supplement to Mr. Lee's communication on the Sense of Sight in Birds. A Description of the Eye in *Rhea americana*, *Phœnicopterus antiquorum*, and *Aptenodytes Humboldtii*.

Geological Society, May 8.—Mr. Joseph Prestwich, F.R.S., in the chair.—The following papers were read:—1. "Notes on Atolls or Lagoon Islands." By Mr. S. J. Whitnell. The author commenced by indicating certain facts which lead him to think that the areas of atolls are not at present sinking, and referred to one instance (that of Funafuti or Ellice Islands), in which he thought there were signs of a slight upward movement. He noticed the occurrence of a furrowed appearance, or a series of ridges or mounds, in some islands, each of which he regarded as produced by a single gale. He also described a freshwater lagoon, about three miles in diameter, as occurring in the Island of Quiros. Mr. Thorpe was acquainted with the atolls around the coast of Ceylon, and thought that the local traditions, untrustworthy as such sources usually were, might afford some evidence as to the date of their origin. The tradition of Ceylon was that the Maldive and Laccadive Islands had within the memory of many been connected with Ceylon. If this were so the evidence was in favour of the area being one of subsidence. Mr. D. Forbes, when in 1859 he spent some months in the Pacific, had been requested by Mr. Darwin to examine into the evidence as to the origin of these atolls by elevation, and had found that the asserted cases of the existence of masses of coral at a considerable elevation above the sea merely arose from blocks having been transported inland by the natives. Though, however, there was no evidence of elevation, it was still possible that such had in certain cases taken place, as there were still active volcanoes in this region. The freshwater lakes he attributed to the drainage of the islands

2. "On the Glacial Phenomena of the Yorkshire Uplands." By Mr. J. R. Dakyns. The author stated that in Derbyshire and Yorkshire, south of the Aire, there is no glacial drift on the eastern slope of the Pennine chain, except where it is broken through by the valleys of the Wye and of the Aire and Calder. The basis of the Aire and the country northward are thickly covered with drift, which contains no rocks foreign to the basis, and thus points to formation by local action. The author ascribed this to the glaciation of the country in part by glaciers, and in part by a general ice-sheet. Evidence of the latter he finds in the fact that drift occurs only on one side of the valleys, namely, on the lee-side of the hills with respect to the source of the drift materials. Traces of the action of glaciers are the great amount of scratched and rounded pebbles in the mounds of drift, which increases in proportion to the distance from their source: the presence of great piles of drift at the junction of valleys, as if by the shedding of the lateral moraines of two glaciers; and the existence of mounds of pebbles and of an alluvial deposit wherever a rock-basin crosses a valley. The Kames or Eskers, which are frequent in the valleys, he ascribed to the deposition of moraines in the sea instead of on land. Prof. Ramsay agreed with the author as to the existence of these rock-basins in the Yorkshire area, and as to the absence of marine drift on great part of the slope of the Pennine chain. The terminal moraines had to some extent become obscured by the washing of soil by rain; but their ancient existence in many of the Yorkshire valleys was indisputable. The features of the country, were, moreover in many instances such as could not be reconciled with the deposition of the drift by marine action. 3. "On a Sea-coast Section of Boulder-clay in Cheshire." By Mr. D. Mackintosh, F.G.S. The principal object of the author was to draw attention to the fact of the occurrence of numerous sea-shells in a lower boulder-clay at Dawpool, as thoroughly glacial in its appearance, structure, and composition, as any clay to be met with along the shores of the Irish Sea, and differing in no essential respect from the *Pinel*, which runs up the slopes and valleys of the Lake District. He pointed out a number of very important distinctions between the Lower and Upper Boulder-clays of Cheshire, referring especially to the light grey or blue facings of the fractures of the latter. He gave a list of a number of large boulders, greenstone and Criffell granite predominating, though among the smaller stones Silurian grit was most prevalent. The author likewise explained the mode of striation of the stones found in the clay, and the position they occupied in reference to their flattened surface. The paper was illustrated by samples of the two clays, a number of shells in various states of preservation, and about forty specimens (most of them named and their parentage assigned) of Silurian grit and argillite, greenstone, several varieties of felstone and porphyry, felspathic breccia, Criffell and Eskdale granites, and granites of unknown parentage, Wastdale or Ennesdale syenite, quartz, Carboniferous Limestone, chalk-flints (?) local gypsum, sandstone, &c. In a letter Mr. Searles V. Wood, Jun., stated that he regarded the Boulder-clay containing the shells as later than the newest of the East-Anglian beds, and the Upper clay as probably equivalent to the Hessle clay. The fragmentary shells sent had been determined by Mr. J. Gwyn Jeffreys, who found eleven species represented among them, and stated that they agreed with the shells from Moel-Tryfaen and Macclesfield. He remarked especially on the occurrence of *Astarte borealis*, a species now extinct in the British area. Prof. Ramsay remarked, with regard to the Bridlington beds which had been cited, that they were probably preglacial, and not glacial. He thought that eventually it would be proved that during the Glacial Period there had been several oscillations in this country both in level and temperature. With respect to temperature, the calculations of Mr. Croll showed the extreme probability of such variations being due to astronomical causes; and these were best illustrated by reproducing his figures in the form of a diagram, showing the curves and oscillations of temperature. 4. "On Modern Glacial Action in Canada.—II." By the Rev. William Bleasdell, M.A. In this paper the author communicated some facts illustrative of the action of ice in Canada, in continuation of a former paper. Fidlar's Island, in the rapids of the river Trent (flowing into the head of Lake Ontario), has been removed within the last eighteen months. Patrick's Island, a mile lower down, is also rapidly disappearing. Salmon Island, in the Bay of Quinte, between Amherst Island and the mainland, which had an area of about an acre fifty years ago, has disappeared, leaving a shoal with about four feet of water over it; and three neighbouring islets, known as The Brothers, are in course of removal. The removal of these islands is due to the action of drift-ice. The author also referred to the formation of ground-ice in the Canadian rivers. Prof. Ramsay mentioned that Sir William Logan had informed him that shore-ice in Canada, charged with boulders, had been known to produce grooves on the face of cliffs as well marked as those of glacial times. He had also mentioned the case of a boulder transported by ice which was of such a size as to have occasioned the wreck of a vessel which had struck upon it.

Mathematical Society, May 9.—W. Spottiswoode, Treas. R.S., in the chair.—Mr. J. W. Glaisher gave an account of his paper "On Functions with Recurring Derivatives." Mr. Tucker (Hon. Sec.) read portions of communications from Prof. J. Clerk Maxwell, on Equations of Motion, and on the Transformation of Solids.—Prof. Clifford made some remarks on a theory of the exponential function derived from the equation $\frac{du}{dt} = pu$. Prof. Cayley, Dr. Hirst, Mr. S. Roberts, and others, took part in a subsequent discussion on the degenerate forms of curves.

Chemical Society, May 16.—Dr. Debus, F.R.S., vice-president, in the chair.—"On the Influence of Pressure upon Fermentation," Part I., by Mr. H. T. Brown. The results of his experiments were that under diminished pressure the amount of gas unabsorbed by potash is greatly increased, and that it contains a proportionally large amount of hydrogen. Acetic acid and aldehyde are also formed under these circumstances, so that it would seem that water is decomposed during the alcoholic fermentation, especially when it takes place under diminished pressure. Papers "On the Electrolysis of Sugar Solutions," by Mr. H. T. Brown; "On the determination of the solubilities and specific gravities of certain Salts of Sodium and Potassium," by Messrs. D. Page and A. D. Keightley; and "An examination of the recent attack on the Atomic Theory," by Mr. Atkinson, were then read. An animated discussion on the Atomic Theory ensued. Mr. C. O'Sullivan then read his elaborate memoir "On the transformation products of Starch."

Anthropological Institute, May 20.—Dr. Charnock in the chair.—Mr. J. Bonomi exhibited and described a new instrument for measuring the proportions of the human body, being specially applicable to the identification of criminals, and adapted for a rapid and very easy method of measurement in military and other large establishments.—A paper was read by Mr. George Harris, V.P., "On Moral Irresponsibility resulting from Insanity." He concluded that persons are not responsible for their actions in cases where they labour under delusions to such an extent that their conduct is not only influenced, but determined, by their belief, although they may still continue to reason correctly. Irresponsibility should be allowed also in those cases where they are impelled by irresistible morbid impulses; and where from disorders of the nervous system they are suffering from violent and uncontrollable irritability. He criticised the legal definition of irresponsibility in cases of that nature. As to suicide affording a proof of insanity, that must depend on the circumstances of each particular case. The author pointed out the contradictory theories laid down respecting insanity, and alluded also to the conflicting opinions expressed by medical men.

Geologists' Association, May 3.—James Thorne, F.S.A., vice-president, in the chair. "On Columnar Basalts," by Mr. John Curry. As a preliminary, the process of the formation of columnar mud was briefly described, the analogy between this process and that of the formation of columnar basalt being such that the same diagrams served for illustrations in both cases, though, in the former case, heat penetrates the fine clayey sediment, and produces columns of dried mud; in the latter, cold advances into the molten lava, and changes it into solid rock, which frequently has a rude but sometimes a perfect columnar structure. Hexagonal columns are the most perfect. In reference to the production of these columnar structures, the chief and most notable conditions are unequal temperatures, which the author designated heat and cold, closely situated at the contact surfaces of dissimilarly constituted bodies. In the above instances the dissimilar bodies in surface contact are, first, the atmosphere and fine clayey sediment; second, the oceanic water and the molten lava. While the solidifying of the lava is being effected, the solid and molten parts may be considered as distinct bodies. It is at and near the surface contacts that the exchanges of heat are most efficient in giving structure to the forming body. The actions of heat and cold, having a directive influence in the formation of hexagonal basaltic columns, were shown in the illustrations. In the concluding part of the paper the large surface contact of the ocean with the bed on which it rests, and the contact of the atmosphere with the land and water surfaces, were adverted to as areas where the exchanges of heat had done and were now doing much work in producing structures. Jointage, cleavage, and various other rock-structures are ascribed as being mostly due to such work. Ice structure is another marked example. It bears a striking analogy to the hexagonal columnar structure of basalts, inasmuch as it often breaks up into columns by slow melting. The ice of a lake sometimes shows such a breakage when it melts in the spring.—"On a visit to the Diamond Fields of South Africa, with notices of geological phenomena by the wayside," by Mr. John Paterson. On the geological questions connected with th diamond fields the author propounded some new views based on a minute and careful examination of the appearances which presented themselves to him on his visit to the diamond-fields. He discredits the theories which would refer the presence of diamonds in Grequaland West to any distant sources; and thinks the evidence incontestable that the marl soil, as he named it, in which the gems are now found, is the true matrix soil of the diamond. This marl soil he considers to be the metamorphosed carboniferous shales of the country, and the change which has worked upon these shales, by which they have been transformed from the black carboniferous shale into the whitish ashy marl in which the diamonds are found, he attributes to intrusions of greenstone trap, which traverse that country from N.E. to S.W. in continually recurring dykes. Mr. Paterson gave some very interesting details of the extent and richness of the diamond diggings in South Africa, and in his picture of the Gong-Gong and Delport Diggings as "Great Rushes" in digger's phrase, resembling in extent and richness Colesberg Kopje, but now nearly worked out, not by the hand of man in a few years, but by the angry waters of the Vaal River through many ages, he found much groundwork of hope that the diamond discoveries of South Africa are to be no fleeting passing industry, but a continuous employment, not only for many years but for many ages.

Society of Biblical Archæology, May 7.—Mr. R. Cull, F.S.A., in the chair.—"On Underground Jerusalem; more particularly in reference to the Plateau of the Haram es Shereef." By Mr. William Simpson. The paper described Omar's search under the guidance of Sophronius, the patriarch of Jerusalem, for the site of the Temple, as one of the first explorations into the topography and archæology of the Holy City. The transference of holy places from one point to another was explained as involving confusion and adding to the difficulties of arriving at reliable facts. The principal theories respecting the site of the Temple and the Holy Sepulchre were defined, and their merits touched upon so far as to indicate the progress of the questions connected with them. The importance of a careful study of the various styles of building in the Haram Wall was pointed out so as to get a date, if possible, as a ground upon which to start. A most interesting part of the paper was a description of the Great Sea, excavated out of the solid rock, under the Temple site, and the supply of water to it from the pools of Solomon near Bethlehem. The great importance of the water system for the Temple uses having an essential bearing on the question of the topography, and the question was still one which required further knowledge and study to arrive at a definite result.—"On the so-called Moabite Stone, described in a late Letter to the *Times*." By Mr. B. G. Jenkins. The author considered that the letter and the inscription bore their own condemnation; for the stone could not be Moses' memento of the conquest of a land he never attacked.—"Observations on the dimensions of the Great Pyramid and the Royal Coffer." By Solomon M. Drach.

PARIS

Academy of Sciences, April 29.—M. Chasles read a paper containing theorems relating to the obliques drawn through the points of a curve under angles of the same size.—M. F. Lucas communicated some general theorems on the equilibrium and movement of material systems.—M. L. Melsens presented a note on some effects of the penetration of projectiles into various media, and on the impossibility of the fusion of leaden bullets in the wounds produced by fire-arms.—A memoir was read on the electrical jet in rarefied gases, and especially on its mechanical power, by MM. A. de la Rive and Sarasin. Their experiments showed that the velocity of rotation of the jet diminishes as the density of the gas is increased, but not in the same proportion, and that the jet possesses considerable mechanical force.—MM. P. A. Favre and C. A. Valson presented a continuation of their memoir on crystalline dissociation, containing the second part of their investigation of the alums.—M. Fizeau presented a report on a memoir by M. Croullebois on the elliptical double refraction of quartz.—A continuation of M. P. Desains' researches upon the reflection of heat was read, and a note by M. D. Gernez on the absorption-spectra of selenium and tellurium, their protochlorides and protobromides, and of the protobromides of iodine and alizarine were presented by M. H. Sainte-Claire Deville.—Several papers and notes on auroras were read, including the continuation of M. J. Silbermann's memoir on the causes and laws of auroras, a note by Father Denza on auroral phenomena observed in Italy in March and April 1872, and a note by M. Guillard on indications of an aurora borealis observed at Lyons on April 8.—A second note by M. W. de Fonvielle on the hypothesis of the magnetisation of the sun was also read.—M. Delaunay presented a note by M. G. Héraud on the tides of lower Cochin China, with especial reference to the determination of the diurnal and semi-diurnal waves.—A note by M. Chapelas on a meteor observed at Rheims on the night of April 19-20, and one by M. Perris on a meteor seen at Agde on the evening of April 24 were read.—M. Aimé Girard presented an investigation of the salt marshes and salt industry of Portugal, in which he describes the details of the extensive manufacture of sea-salt carried on in that country.—M. Bussy presented a note by M. J. Personne on the presence of selenium in the sulphuric acid manufactured in France.—A note by the Abbé Laborde on the action of oxygen upon certain vegetable infusions was communicated by M. Pasteur. The author, after hermetically sealing a vegetable infusion in a glass vessel, and keeping it for a month unchanged, produced from it successive small quantities of oxygen by electrolysis. The infusion still remained unaltered, notwithstanding the replacement of the vacuum by an atmosphere of oxygen; but when the vessel was opened to the air vegetation soon made its appearance.—M. Pasteur also communicated a note by M. Griessmayer on the question of the assimilation of ammonia by yeast.—A note by M. H. Byasson on the physiological action of formic æther was presented by M. Robin.—M. Blanchard presented a note on the appearance of unusual numbers of *Bibio hortulanus*, a dipterous fly, in Paris.—A paper by M. P. de Gasparin on the constitution of clays was read. This paper contained an analysis of a very fertile clay soil from near Nîmes.—M. de Quatrefages communicated a note by M. E. Rivière on the human skeleton discovered in the caverns of Boussé-Roussé, in Italy, on March 26, 1872. This skeleton, which was associated with unpolished flint implements, presents no simian characters, and the cranium most nearly resembles those of Cro-Magnon.

May 6.—M. Chasles presented a note by M. H. Durrande on the general properties of the displacement of a figure of variable form.—A note by M. T. D'Estocquois on the movement of water in drains was read.—M. J. Bourget read a memoir on the economic coefficient in the thermodynamics of permanent gases.—M. Wurtz presented a note by M. G. Salet on the light emitted by the vapour of iodine, in which the author stated that that vapour may be heated to redness.—A letter from M. Tacchini to M. Faye, with regard to the Society of Italian Spectroscopists, and a reply to some of the statements contained in it by M. Faye, were read. They contained a discussion of various matters connected with our knowledge of the sun.—A note on atmospheric ozone by M. L. Palmieri was presented by M. C. Sainte-Claire Deville. The author stated that air, by passing through a glass tube, ceases to colour iodised starch paper. M. Sainte-Claire Deville confirmed this statement from M. Houzeau's observations.—A letter from M. Donati on auroras was communicated by M. Delaunay.—M. Le Verrier presented a note by Father Denza on a sand-shower which fell in Italy during the night of the 19-20 April.—A letter by M. Silbermann on the relations between meteorological phenomena and volcanic eruptions was read.—A note was read by M. C. Daniel on a process of decorative painting upon tin, and on this M. Dumas made some remarks.—M. Frémy presented a note by M. Prinvault on the transformation of pyrophosphates into phosphates by the action of boracic and sulphuric acids.—A note by M. Yvon on the quantitative determination of copper by cyanide of potassium was communicated by M. Bussy. This note relates to one on the same subject by M. Lafollye, read on April 22; M. Yvon states that the reaction then employed was indicated in 1859 by M. Buignet, points out certain inaccuracies in M. Lafollye's paper, and describes a process of his own.—M. Wurtz presented a note by MM. C. Girard and G. de Laire on the formation of diphenylamine with reference to a recent note by MM. Dusart and Bardy.—M. Arrez forwarded a letter relating to his process of treating vines attacked by *Phylloxera vastatrix*, and upon this M. Dumas made some remarks.—Prof. Milne-Edwards presented a note by M. A. F. Marion on the reproductive organs of *Oria Armandi* Clap.—M. Bouley presented a note by M. S. Arloing on the nature of the blood-globules; and M. C. Robin some investigations by M. P. Bouland on the normal curvatures of the rachis in man and animals.—M. Ziegler presented a paper on a physiological fact observed in leaves of *Drosera*, containing some very curious observations on the effects produced on that plant by albuminoid substances after contact with the human hand.—M. Paul Gervais described the lower jaw of a new species of fossil ape from the lignites of Monte Bamboli in Italy. He regards this animal as forming a new genus standing at the end of the series of anthropomorphous apes after the gorilla and before the baboons and macaques. He gives it the name of *Oreopithecus Bambolii*.—M. Delesse communicated an investigation of the deformations which the French geological formations have undergone.—A note on the granite, sand, and clay with flints of the department of the Seine and Oise, by MM. Potier and Donvillé, was read, as also a paper on the valley of the Vezère, by M. F. Hément. The latter, communicated by M. de Quatrefages, contains accounts of traces of prehistoric man found in the valley.

BERLIN

German Chemical Society, May 13.—Dr. Bulk reported on the action of fuming sulphuric acid on aniline blue. He obtained tri-phenyl-rosaniline, in which four molecules of SO_3H replace four atoms of hydrogen, Nicholson's process yielding conjugated acids with from one to three molecules of SO_3H. Hofmann's violet behaves in a similar way to fuming sulphuric acid.—C. Scheibler stated that Erlenmeyer's observations on the non-existence of Gerhardt's para-thionic acid have been previously made by himself.—C. Rammelsberg has analysed a beautifully crystallised specimen of cast iron, confirming thereby his view that the various commercial grey and white irons are isomorphous mixtures of the pure element with combined carbon, and with non-combined carbon.—Dr. A. W. Hofmann reported on researches made by Dr. Geyger and himself on the action of aniline on azo-diphenyl-diamine ($N_3(C_6H_5)_2H$) namely:—$C_{12}H_{11}N_3 + C_6H_7N = C_{18}H_{15}N_3 + NH_3$. The body, violet and soluble in alcohol, combines with one atom of HCl. Its formation and constitution correspond to the magdala red which has been obtained through the action of naphthyl-amine on azo-dinaphthyl-diamine. The body has the same composition as violaniline, obtained by oxydising pure aniline, when three molecules are condensed into one by losing six atoms of hydrogen. Azo-toluyl-diamine, $N_3(C_7H_7)_2H$, treated with aniline, gives rise to an analogous compound, having most likely the composition of rosaniline, $C_{20}H_{19}N_3$, from which it seems, however, to differ. A colouring matter recently offered in the trade, under the name of saffranine (mixed with large quantities of carbonate of lime), dissolving with a yellowish red in water, with a violet colour in concentrated hydrochloric, with a green colour in concentrated sulphuric acid, has been obtained in a similar manner; a mixture of aniline and toluidine being exposed to the action of nitrous acid and afterwards oxydised. Its chloride contains $C_{20}H_{20}N_4HCl$, the formula of which corresponds in appearance to a salt of amido-rosaniline, although its constitution is most likely very different. Perkins' analyses of mauveine agree with the formula of phenylated saffranine, $C_{26}H_{24}N_4$; and some of its reactions, notably its behaviour to hydrochloric and sulphuric acid, coincide with this suggestion, these acids producing violet and green colours as with saffranine. But it is not easy to understand how the fourth atom of nitrogen should enter into mauveine under the ordinary conditions of its formation.—Th. Peterssen published the analysis of a metasilicate of sodium, $Na_2SiO_3 + 5$ aq.—Barl and Hübner found that nitrobenzol and similar substances form hydrocyanic acid when fused with potash. A similar observation has been published by Wöhler in 1828.—Geromont has obtained isobutyric acid from bibromo-pyrotartaric acid.—Michaelis found PCl_3Bo_2 to form unstable combinations with Br_2 and Br_4, comparable to the addition of water of crystallisation to a saturated compound.

BOOKS RECEIVED

ENGLISH.—Conversations on Natural Philosophy, 14th edition: Mrs. Marcet (Longmans).—The Geometry of Conics, Part 1.: C. Taylor (Deighton and Bell).—Esse and Posse, a comparison of Divine eternal laws and powers: H. T. Braithwaite (Longmans).

FOREIGN.—Deutscher Universitäts Kalender für das Sommer-Semester, 1872: Dr. F. Ascherson, Berlin.—Sonnensystems: Meibauer.

DIARY

THURSDAY, MAY 23.

ROYAL INSTITUTION, at 3.—On Heat and Light: Prof. Tyndall, F.R.S.
LONDON INSTITUTION, at 7.30.—On the Artificial Formation of Alcohols from their Elements: Prof. H. E. Armstrong.

FRIDAY, MAY 24.

ROYAL INSTITUTION, at 9.—On Babbage's Calculating Machines: Prof. Clifford.
LINNEAN SOCIETY, at 3 p.m.—Anniversary Meeting.
VICTORIA INSTITUTE, at 4 p.m.—Anniversary Meeting.
QUEKETT MICROSCOPICAL CLUB, at 8.

SATURDAY, MAY 25.

ROYAL INSTITUTION, at 3.—On the Chemical Action of Light: Prof. Roscoe, F.R.S.
GOVERNMENT SCHOOL OF MINES, at 8.—On Geology: Dr. Cobbold, F.R.S.

MONDAY, MAY 27.

ROYAL GEOGRAPHICAL SOCIETY, at 1 p.m.—Anniversary Meeting.
LONDON INSTITUTION, at 4.—On Elementary Botany: Prof. Bentley.

TUESDAY, MAY 28.

ROYAL INSTITUTION, at 3.—On Development of Belief and Custom: E. B. Tylor.

WEDNESDAY, MAY 29.

ROYAL SOCIETY OF LITERATURE, at 8.30.—On the Province of Conjecture in Literary Criticism: Dr. C. M. Ingleby.

THURSDAY, MAY 30.

ROYAL SOCIETY, at 8.30.
SOCIETY OF ANTIQUARIES, at 8.30.
ROYAL INSTITUTION, at 3.—On Heat and Light: Prof. Tyndall, F.R.S.
LONDON INSTITUTION, at 7.30.—Experimental Evidence against the Spontaneous Generation of Living Things: W. N. Hartley, F.C.S.

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